Figure 1. Top -level SDI architecture.
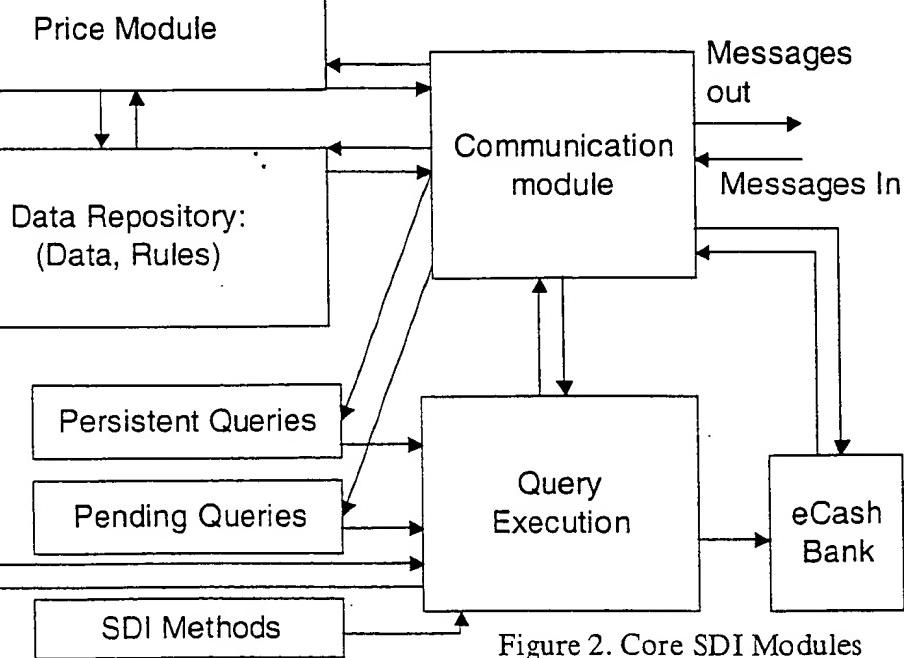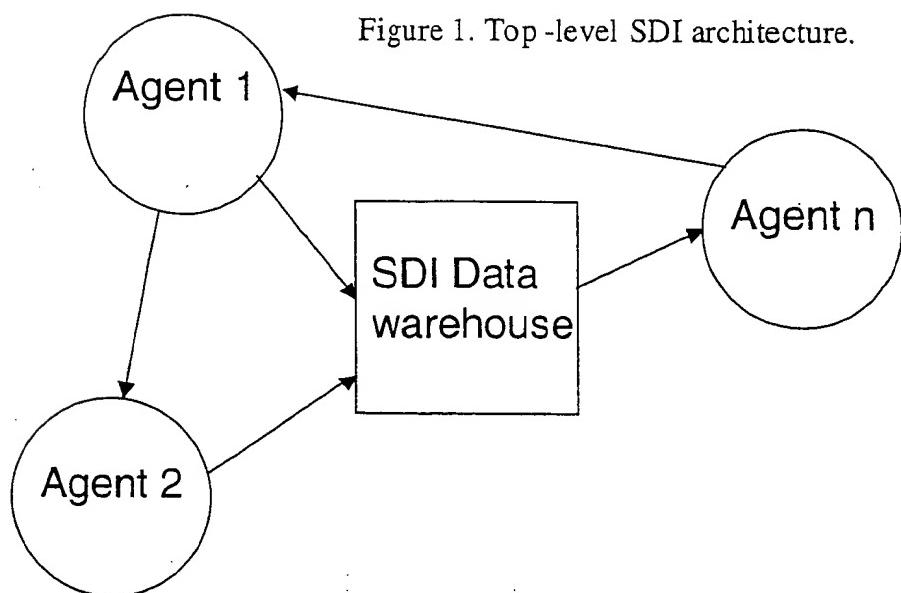

Figure 2. Core SDI Modules

DATA RECORDS | QUERY PROGRAM..

TABLE OF POINTERS

Record 1 ◄─────── ○ Pointer 1   Cost: $1

Record 2 ◄─────── ○ Pointer 2   Cost: $2

...   .

SELECT COMMANDS

Get cheapest
data records
(internal market) ───► New pointers...

◄─── SELECT with Property X

PROCESS COMMANDS

Update costs on
current pointers

Request Information
Information ───► Var A.
Pointers 1, 3, 4

Final
Result

Request Information
Information ───► Var B.
Pointers 1, 2.
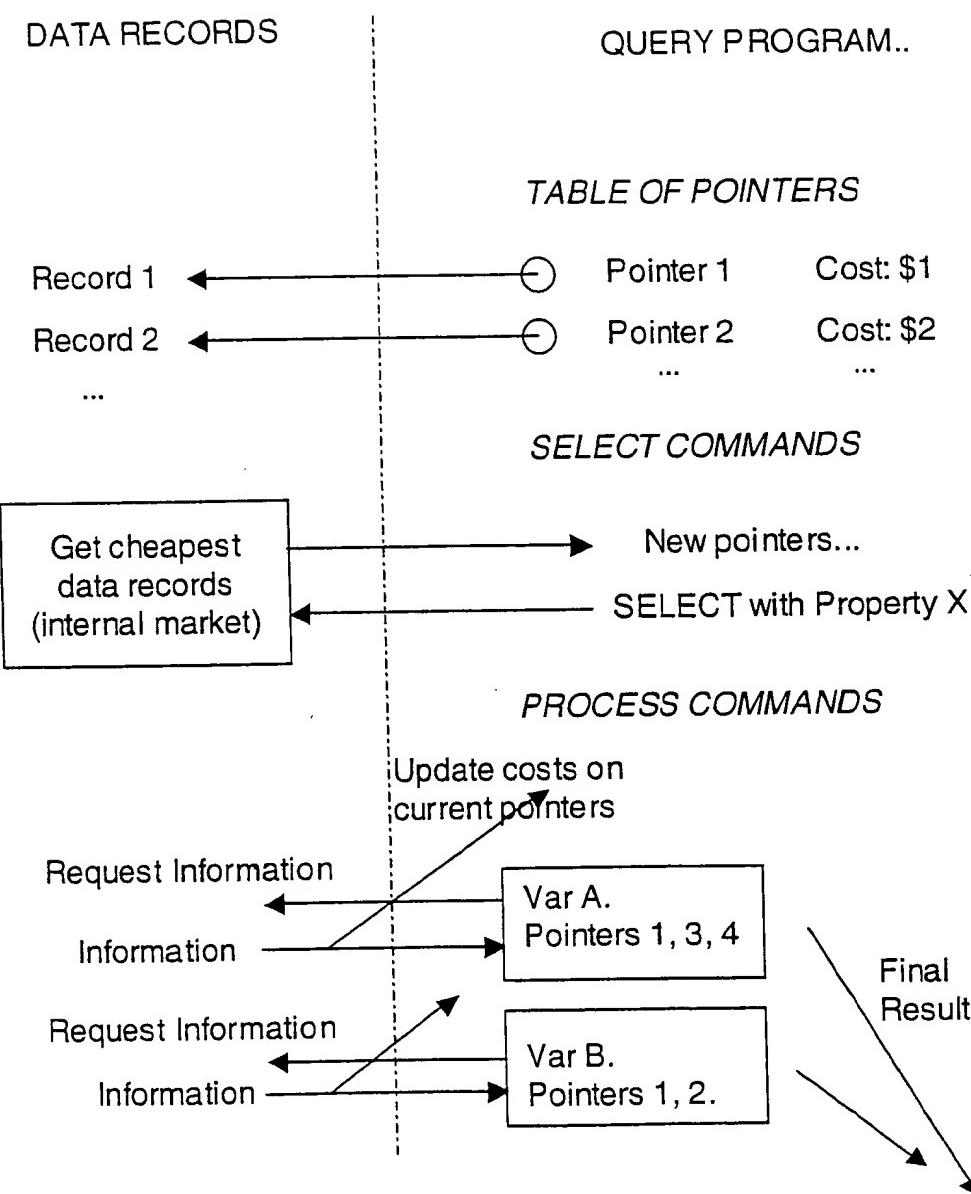
Figure 3: Query Execution

Data
Repository

Persistent
Queries

Pending
Queries

To Agents

Result | Messages in

Communication
Module

Result | Job
Request

To Query Execution
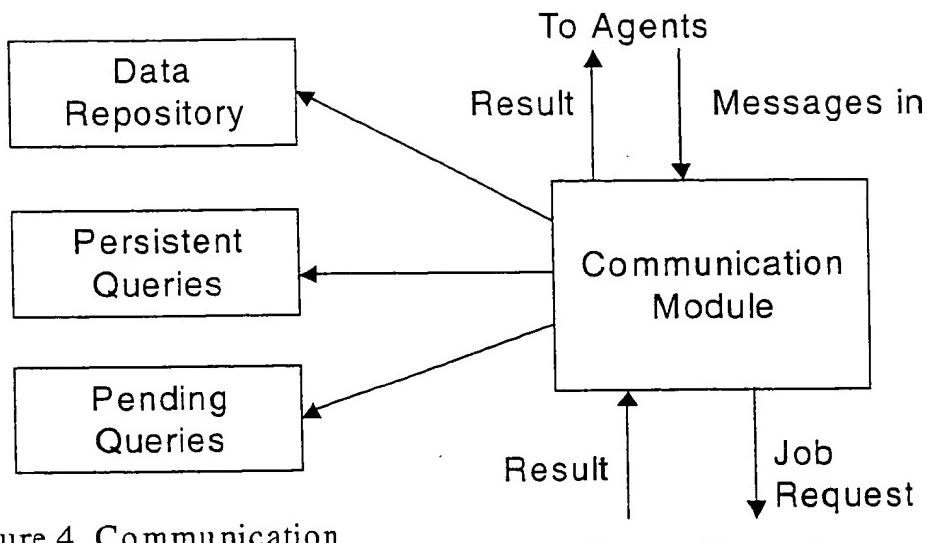
Figure 4. Communication
Module

2. Request Information
from SDI data warehouse

Agent 2
SDI proxy agent

3. Receive
information

1. Provide PID
for SDI data
warehouse

4. Provide
personalized
information,
services

SDI Data
warehouse

Agent 1
SDI proxy agent
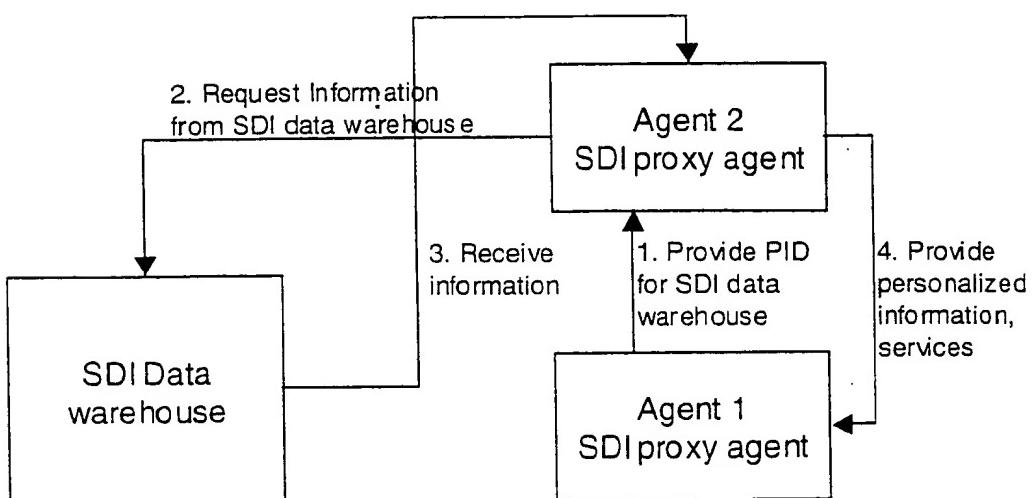
Figure 5: Data in the central SDI data
warehouse.

2. Request Information
from SDI data warehouse

Agent 2
SDI proxy agent

6. Provide
personalized
service

1. Provide PID
for SDI data
warehouse

4. Request more
information

SDI Data
warehouse

3. Receive
information

Agent 1
SDI proxy agent

5. Provide
information
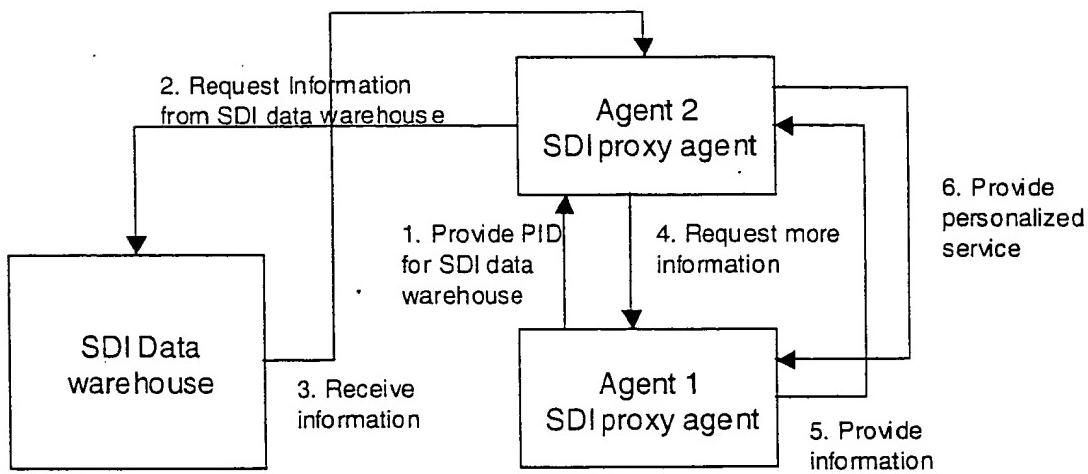
Figure 6: Data Stored Client Side and in
the SDI data warehouse

Information &
Methods

Rule
templates

Interpreter

Program

Query-
execution
module

Profile

Processed
information
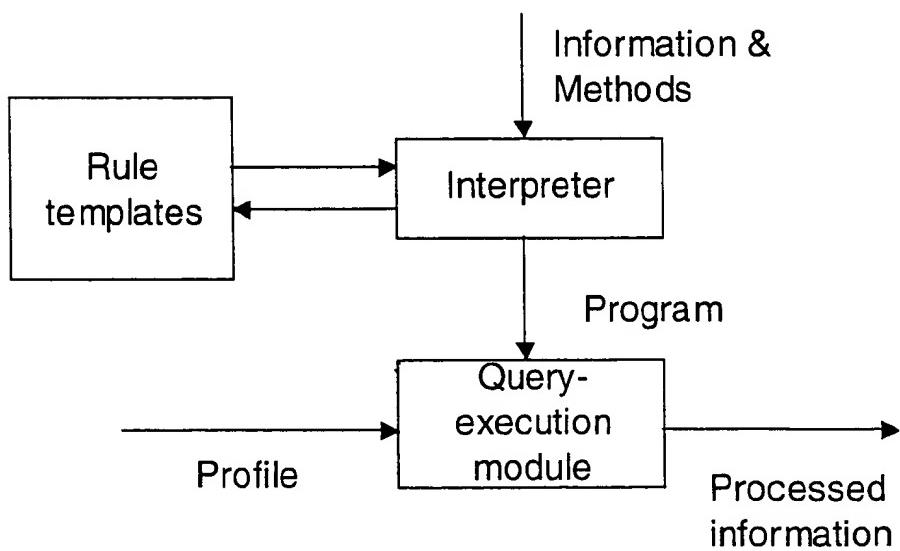
Figure 7. Client-side
Personalization.

Figure 8: Agent SDI architecture: Personalization agent
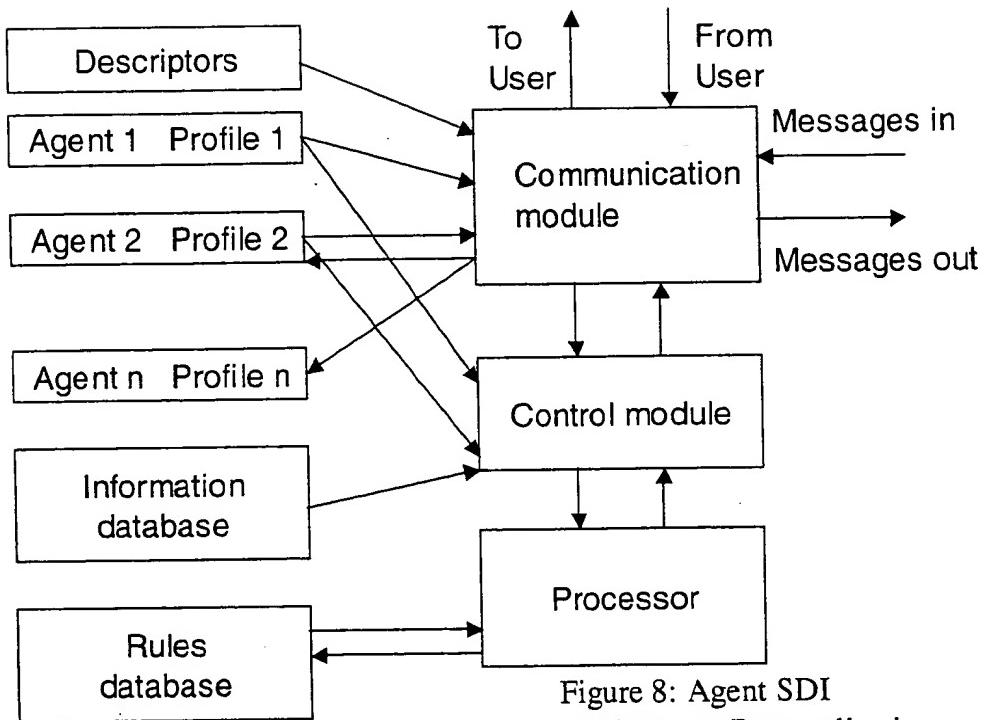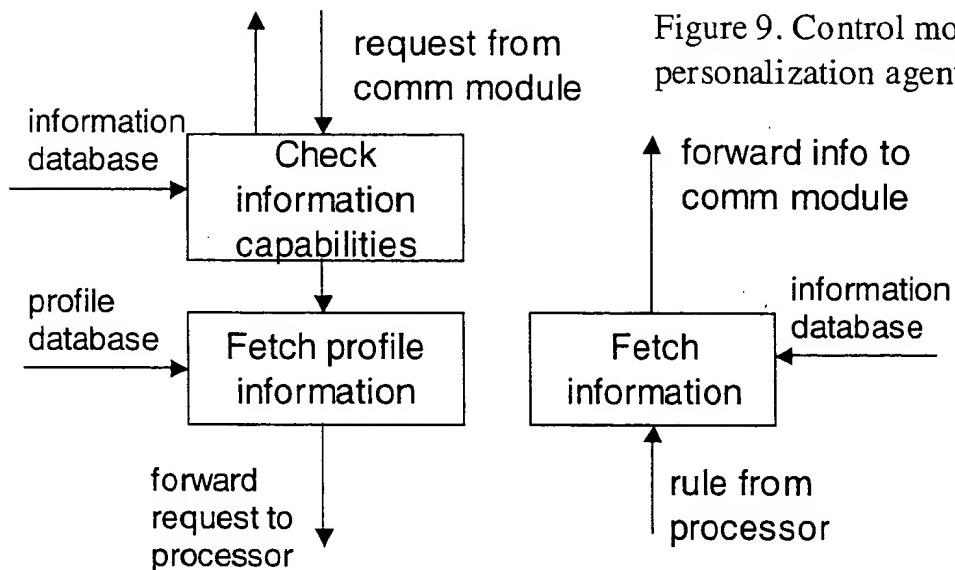
request from
comm module

Figure 9. Control module,
personalization agents

information
database

Check
information
capabilities

forward info to
comm module

profile
database

Fetch profile
information

Fetch
information

information
database

forward
request to
processor

rule from
processor

(Figure 9 above)

Profile, Info request

Rules

Decision
:   Module

Rule
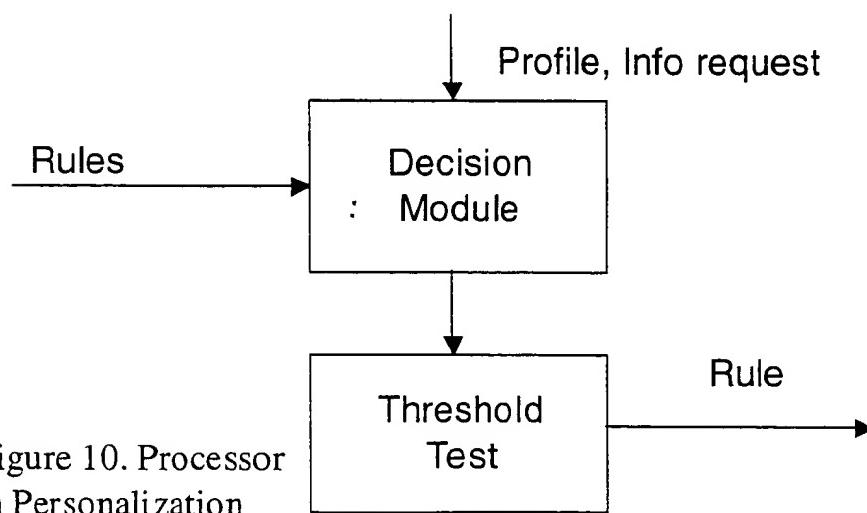
Figure 10. Processor
in Personalization
agent

Threshold
Test

Figure 10

Vendors
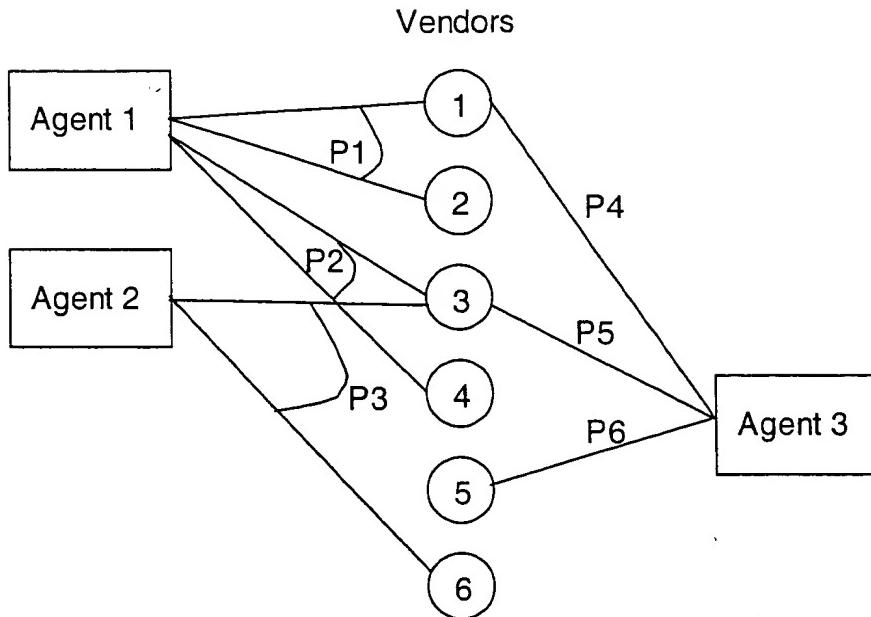
Figure 11. Client-side Identity
Management
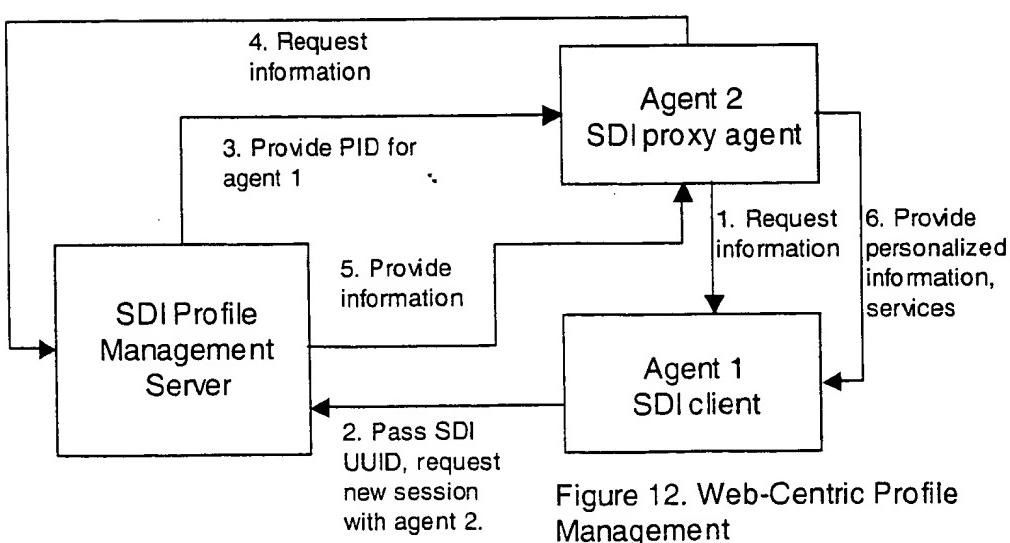
Figure 12. Web-Centric Profile
Management
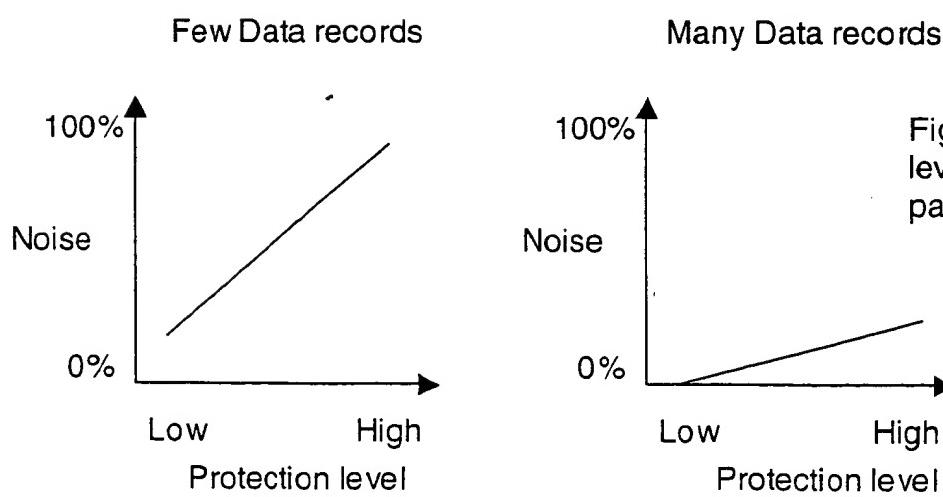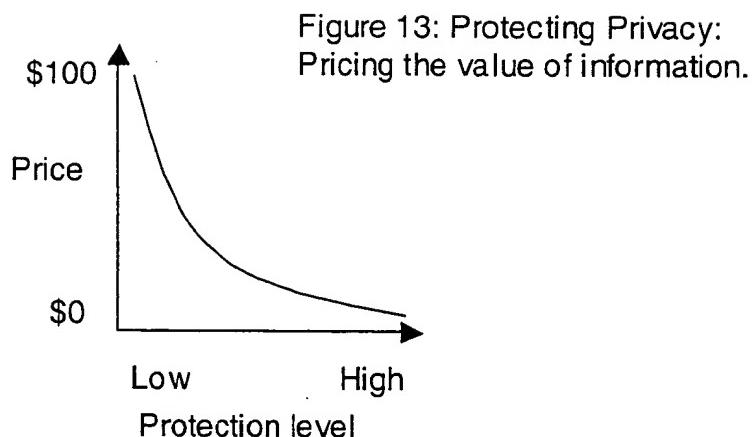
Figure 13: Protecting Privacy:
Pricing the value of information.
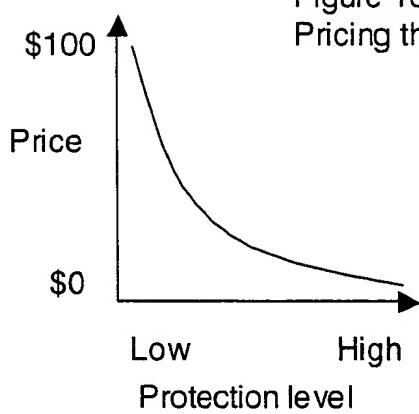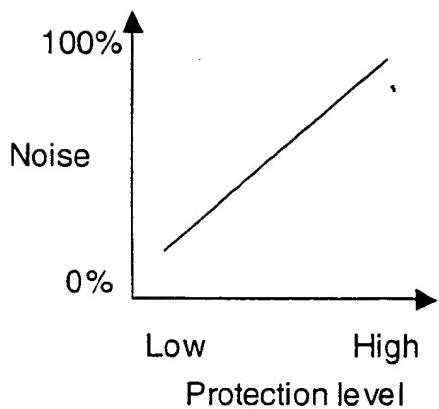
$100

Price

$0

Low   High
Protection level

Few Data records

100%

Noise

0%

Low   High
Protection level

Many Data records

100%

Noise

0%

Low   High
Protection level

Figure 14. Selecting a
level of noise to provide a
particular protection level.

Figure 13: Protecting Privacy:
Pricing the value of information.

$100

Price

$0

Low   High
Protection level

Few Data records

100%

Noise

0%

Low   High
Protection level

Many Data records

100%

Noise

0%

Low   High
Protection level

Figure 14. Selecting a
level of noise to provide a
particular protection level.

User

User views advert

Central SDI data warehouse

New ad

Vendor

Push advert to relevant users

Client
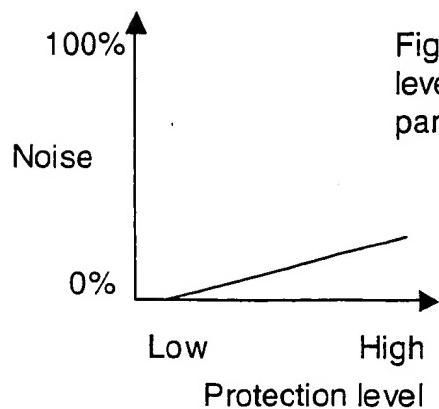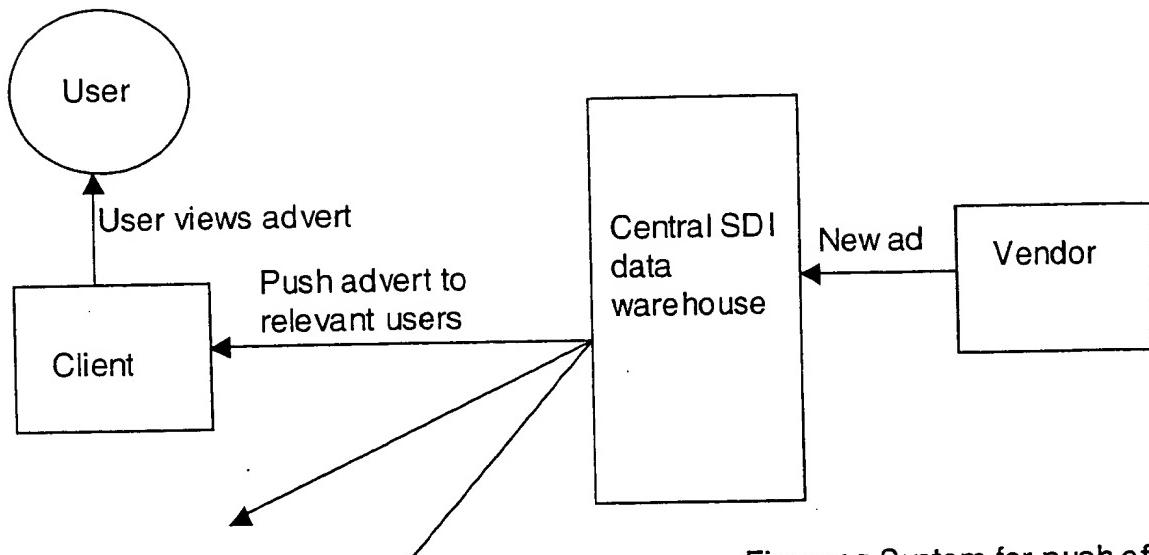
Figure 15. System for push of targeted ads to users in iamworthit.

Bit String to Identify a Community Dollar.

Public Key, Vendor 1, $$value

Public Key, PID_1

Value & Vendor signature

Psuedonuym signature
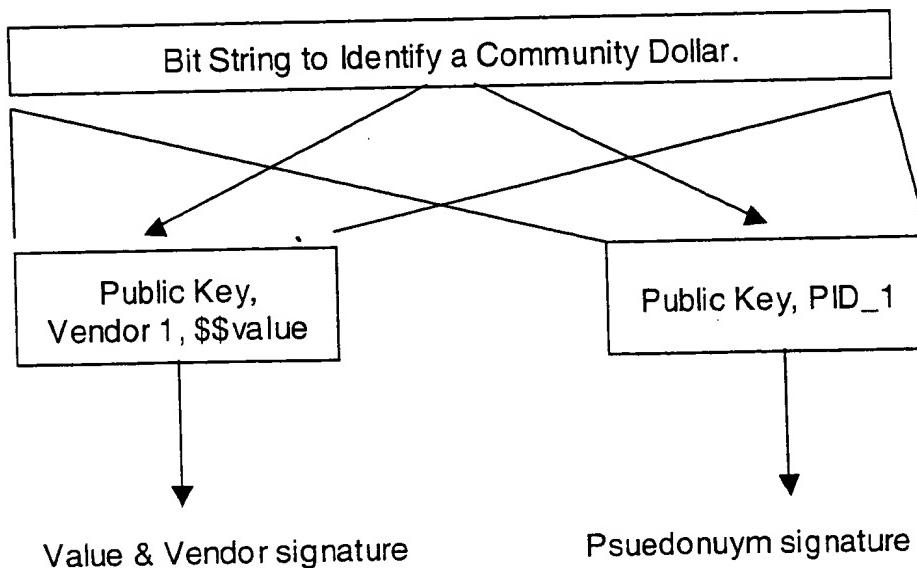
Figure 16. E-cash method to deliver community dollars.

Agent.
Local profile
information and
profile
management

Customized content & offers, Personaliztion
functions, etc.

Profile information, suggestions for customized
content, etc.

Request for time-of-
purchase competition

Vendor.

Submit new profile
information.

Central SDI data
warehouse
(contains profile
information about agents)

Profile information, results
of data mining, etc.

Request time of
purchase competition.

Request
adverts

Time-of-Purchase
server.

Request information to
enable requests for
competition

Advertising
Network Server.

Push a choice of adverts

Figure17. Time-of-Purchase/Iamworthit system

Vendor 1

Offer

Request
counteroffers

Initial offer,
pseudonymous ID
to use in collecting
profile information

Vendor 2

Vendor 3

Client

Time-of-purchase
server

Vendor 4
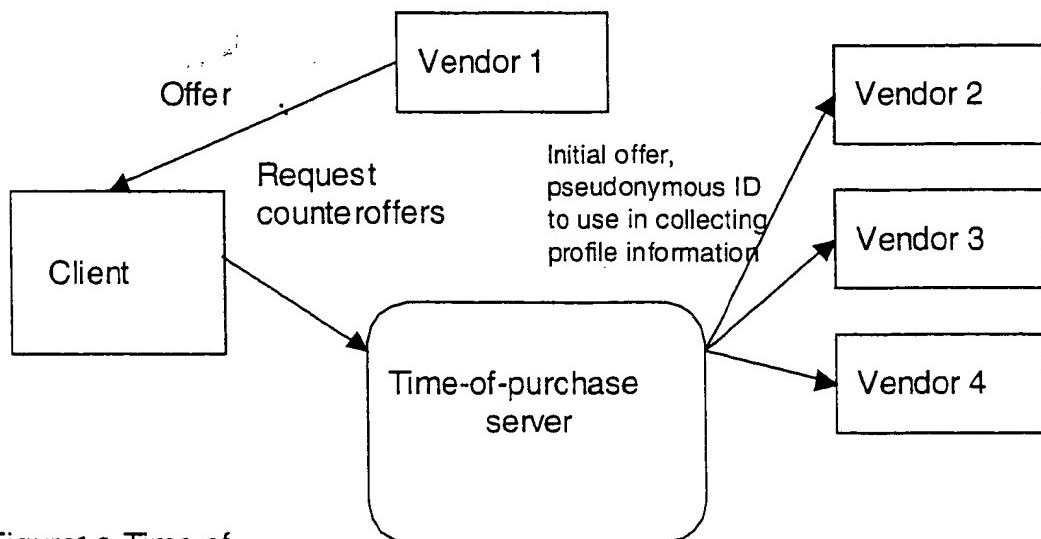
Figure18, Time of
purchase competition

Client —— Profile ——> Vendor

Client <—— Personalized content —— Vendor

(a) Traditional Method

Client —— Request for Web page ——> Vendor

Client <—— Evaluation function —— Vendor

Client —— Selection of informaton ——> Vendor

Client <—— Personalized content —— Vendor
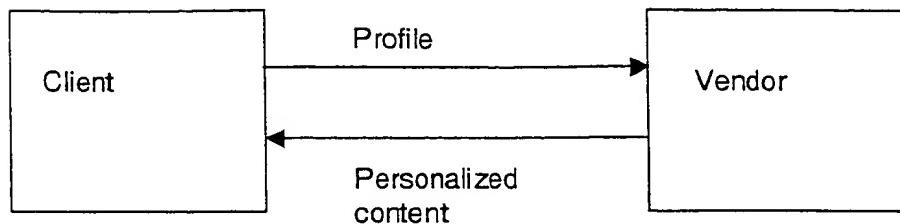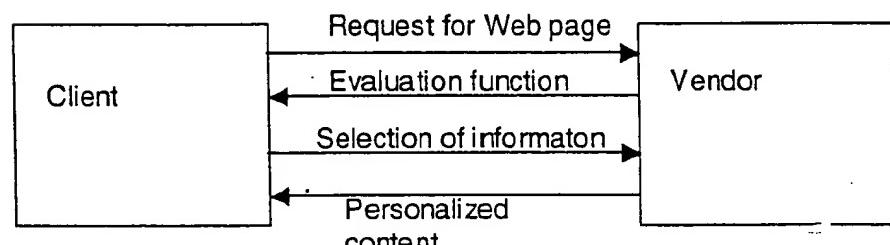
(b) Iamworthit/SD I Method

Figure 1 9.
Customization of
information to users.

2. Push personalized content

Client <—— Vendor

1. Hit Vendor Site

4. Push choice of adverts

3. Request targeted ad

Ad-server

5. Request advert
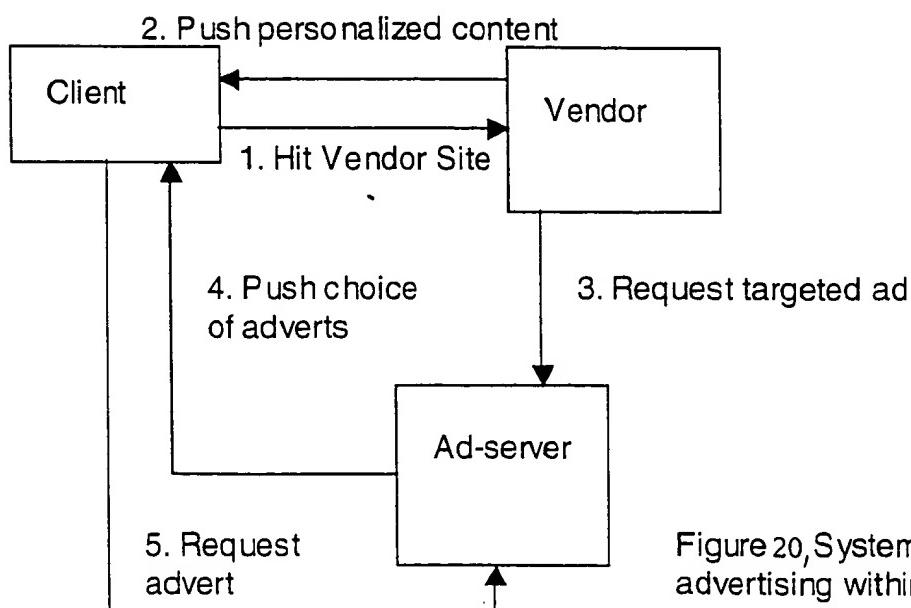
Figure 20, System for targeted
advertising within iamworthit.

Profile of local user

Profile of local user

Original
Space of
data points

Reduced
Space of
data points
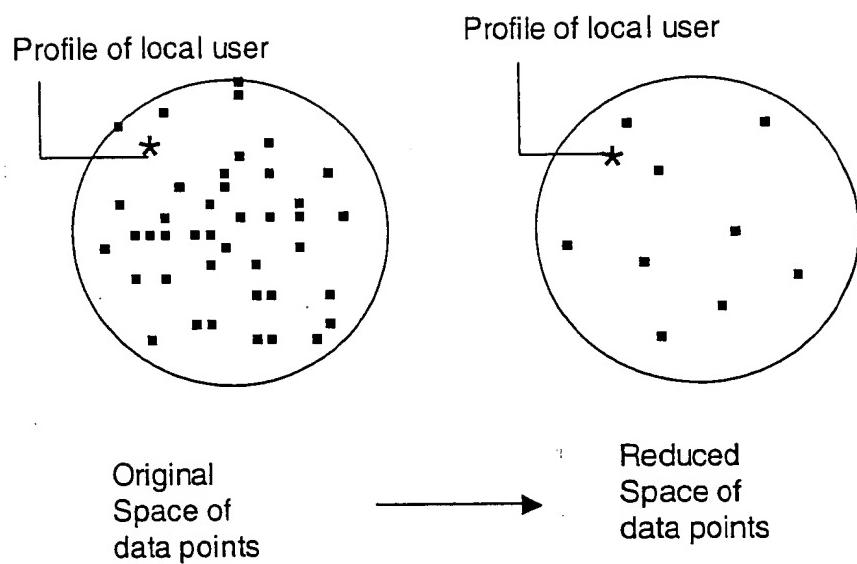
Figure 21. Concise Client-Side Method
Descriptions.